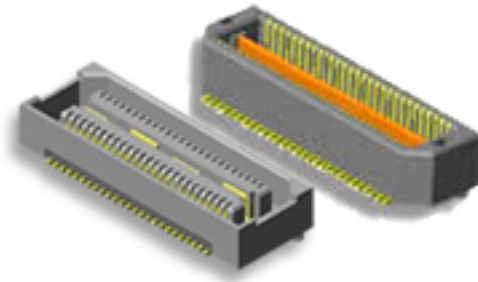


Series: **QSS / QTS** High Speed Socket 0.635 mm pitch



## 1.0 SCOPE

- 1.1 This specification covers performance, tests and quality requirements for the Samtec QSS/QTS High Speed Socket/Terminal 0.025" pitch Series in a 5 mm height configuration (unless otherwise noted).

## 2.0 ELECTRICAL

- 2.1 Dielectric Withstanding Voltage, DWV, per EIA-364-20
  - 2.1.1 938 VAC mated with QTS
- 2.2 Insulation Resistance, IR, per EIA-364-21
  - 2.2.1 > 5,000 Meg Ohms --- PASS
- 2.3 Low Level Contact Resistance, LLCR, per EIA-364--23
  - 2.3.1 37.1 milli Ohms Average - Contact System
  - 2.3.2 4.1 milli Ohms Average - GND System
- 2.4 Current Carrying Capacity for a 30°C temp rise, CCC, per EIA-364-70
  - 2.4.1 1.1 A (6 Contacts in series)
  - 2.4.2 7.8 A - GND System, Two Banks

## 3.0 MATERIALS

- 3.1 Insulator Material
  - 3.1.1 LCP
- 3.2 Contact
  - 3.2.1 Copper Alloy with Gold over 50 microlnches Nickel

## 4.0 MECHANICAL

- 4.1 Operational Temperature
  - 4.1.1 -55 degrees C to 125 degrees C
- 4.2 Mating/Unmating forces, per EIA-364-13
  - 4.2.1 3.8/3.9 lbs respectively - One Bank
  - 4.2.2 13.3/11.7lbs respectively - Three Banks
  - 4.2.3 21.2/16.5 lbs respectively - Five Banks
- 4.3 Durability after 1000 cycle per EIA-364-23
  - 4.3.1 LLCR change < 15.0 milli-Ohms (L- plating) --- PASS

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4.4 Normal Force at 0.006 inches deflection, per EIA-364-04

4.4.1 90 gr.

**5.0 ENVIRONMENTAL**

5.1 Thermal Aging per EIA-364-17

5.1.1 No Evidence of Physical Damage seen --- PASS

5.1.2 Change in Contact LLCR not to exceed +15.0 milli-Ohms (L- plating) --- PASS

5.1.3 Change in Ground LLCR not to exceed +5.0 milli-Ohms (L- plating) --- PASS

5.1.4 Change in Contact LLCR After Thermal and Gas Tight not to exceed +15.0 milli-Ohms (L- plating) --- PASS

5.1.5 Change in Ground LLCR After Thermal and Gas Tight not to exceed +5.0 milli-Ohms (L- plating) --- PASS

5.1.6 Test Conditions

5.1.6.1 105 degrees C

5.1.6.2 300 hours

5.2 Cyclic Humidity per EIA-364-31

5.2.1 No Evidence of Physical Damage seen --- PASS

5.2.2 Insulation Resistance > 5000 Meg Ohms --- PASS

5.2.3 No evidence of Breakdown or Arcing when applying 750 VAC --- PASS

5.2.4 Change in LLCR not to exceed +15.0 milli-Ohms (L- plating) --- PASS

5.2.5 Test Conditions

5.2.5.1 Cyclic 25 degrees C to 65 degrees C for 240 hours, at 90% to 95% RH

5.2.5.2 Time Condition "B" (240 hours) for Method III, excluding sub-cycle 7A and 7B

5.3 Thermal Shock per EIA-364-32

5.3.1 No Evidence of Physical Damage seen --- PASS

5.3.2 Change in Signal LLCR not to exceed +15 mOhm --- PASS

5.3.3 No evidence of Breakdown or Arcing when applying 675 VAC

5.3.4 Insulation Resistance > 5000 Meg Ohms --- PASS

5.3.5 No Contact Interruptions greater than 1.0 microSec

5.3.6 Test Conditions

5.3.6.1 # Thermal Cycles:

5.3.6.2 Hot Temperature: 85 degrees C +3 degrees C/-0 degrees C

5.3.6.3 Cold Temperature: -55 degrees C +0 degrees C/-3 degrees C

5.3.6.4 Dwell/Configuration: 30 Minutes, Mated and Mounted

5.3.6.5 Hot/Cold Transition Instantaneous

5.4 Gas Tight per EIA-364-36

5.4.1 Signal Contact LLCR 29.3 milli Ohms Average - Contact System

5.4.2 Signal Contact Delta LLCR < 15.0 milli-Ohms (L- plating) --- PASS

5.4.3 Ground Contact LLCR, 2.5 milOhms

5.4.4 Ground Contact delta LLCR, < 5.0 milli-Ohms (L- plating) --- PASS

5.5 Mechanical Shock per EIA-364-27

5.5.1 No Evidence of Physical Damage seen --- PASS

5.5.2 Change in Signal LLCR not to exceed +15 mOhm --- PASS

5.5.3 Test Conditions

5.5.3.1 Peak Value: 100 G

5.5.3.2 Duration: 6 milliSec

Series: **QSS / QTS** High Speed Socket 0.635 mm pitch

- 5.5.3.3 Waveform: Sawtooth
- 5.5.3.4 Velocity: 11.3 FPS
- 5.5.3.5 # Shocks/Direction 3 Shocks/3 Axes (18 total)

5.6 Mechanical Shock per EIA-364-27

- 5.6.1 No Evidence of Physical Damage seen --- PASS
- 5.6.2 No Contact Interruptions greater than 1.0 microSec --- PASS
- 5.6.3 Test Conditions
  - 5.6.3.1 Peak Value: 100 G
  - 5.6.3.2 Duration: 6 milliSec
  - 5.6.3.3 Waveform: Half Sine
  - 5.6.3.4 Velocity: 12.3 FPS
  - 5.6.3.5 # Shocks/Direction 3 Shocks/3 Axes (18 total)

5.7 Vibration per EIA-364-28

- 5.7.1 No Evidence of Physical Damage seen --- PASS
- 5.7.2 No Contact Interruptions greater than 1.0 microSec --- PASS
- 5.7.3 Test Conditions
  - 5.7.3.1 Test Condition: Test condition V, Random
  - 5.7.3.2 Frequency: 50 to 2000 Hz
  - 5.7.3.3 PSD: 0.04
  - 5.7.3.4 Duration: 2 Hour/Axis, 3 Axes Total
  - 5.7.3.5 G's: 7.56 G rms

5.8 Solderability/Solvent Resistance

- 5.8.1 Processing to printed circuit boards at 230, 260 and 280 degrees C produced no blistering, distortion or discoloration --- PASS
- 5.8.2 No Evidence of discoloration, degradation or physical damage to the plastic housing. --- PASS

5.9 Solder Joint Reliability

- 5.9.1 Expected Life at 1000 ppm failures > 20 Years
- 5.9.2 Test Conditions
  - 5.9.2.1 Thermal Limits: LOW, 0 C +/-2 C; HIGH 100 C +/-2 C
  - 5.9.2.2 Ramp/Dwell Pattern: 10 Minute Ramp and a 5 minute dwell
  - 5.9.2.3 Event Classification: Interruption exceeding 300 Ohms with duration > 200 nSec
  - 5.9.2.4 Failure Criteria: 15 Events within 100 thermal cycles. Stop test for > 62% product failure.

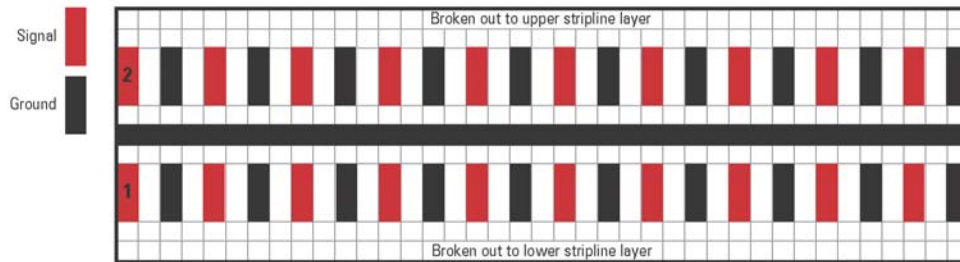
Series: [QSS](#) / [QTS](#) High Speed Socket 0.635 mm pitch

**6.0 HIGH FREQUENCY PERFORMANCE**

6.1 Empirical Boundaries on Performance with Sinusoidal Signals

- 6.1.1 DV configuration, readings based on using  $\pm 10\%$  limits on Impedance and Crosstalk.
- 6.1.2 System Impedance: 50 $\Omega$  and 100 $\Omega$  for Single-Ended and Differential Pair respectively.
- 6.1.3 For complete test information, click [HERE](#)

6.2 Standard configuration single-ended signaling, 1:1

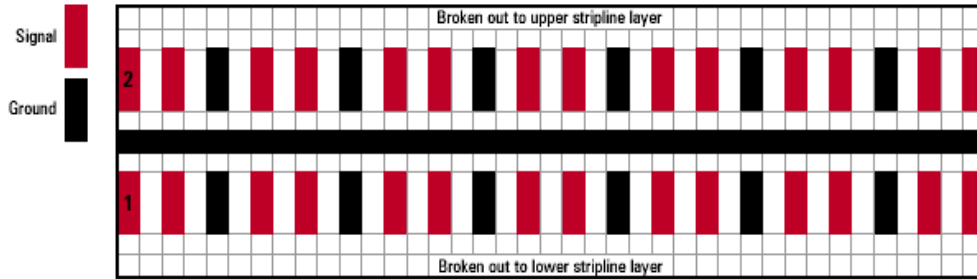


Signal Ended Applications		
Maximum Impedance Mismatch & Crosstalk	System Bandwidth	Signal Rise Time
5%:	Up to 400 MHz	No Faster than 875 ps
10%:	Up to 1.2 GHz	No Faster than 300 ps
Data Valid Up To:	12 GHz	30 ps

Mated Height	Performance
8mm	1.2 GHz
11mm	2.8 GHz
16mm	2.3 GHz

Series: **QSS / QTS** High Speed Socket 0.635 mm pitch

6.3 Standard Configuration, Differential Pair Signaling



Differential Applications		
Maximum Impedance Mismatch & Crosstalk	System Bandwidth	Signal Rise Time
5%:	Up to 740 MHz	No Faster than 475 ps
10%:	Up to 1.75 GHz	No Faster than 200 ps
Data Valid Up To:	12 GHz	30 ps

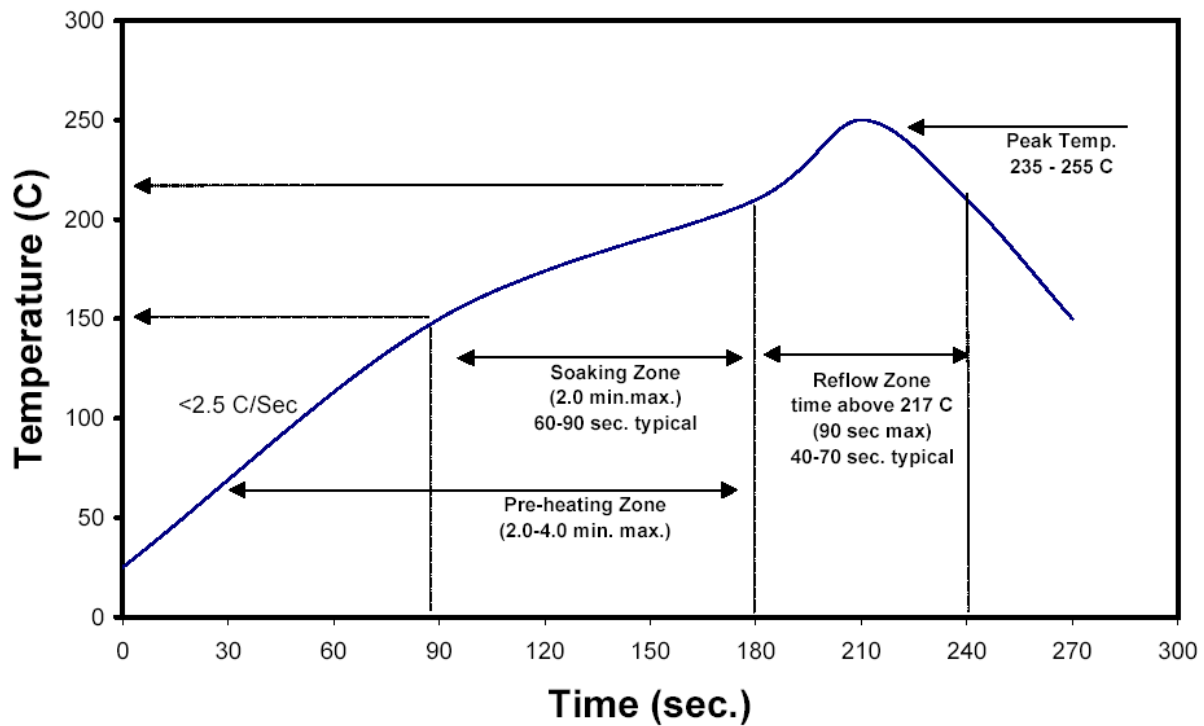
Mated Height	Performance
8mm	1.75 GHz
11mm	520 MHz
16mm	35 MHz

For additional information, contact Samtec Signal Integrity Group [sig@samtec.com](mailto:sig@samtec.com) or 1-(800)-726-8329.

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## 7.0 PROCESSING, LEAD-FREE

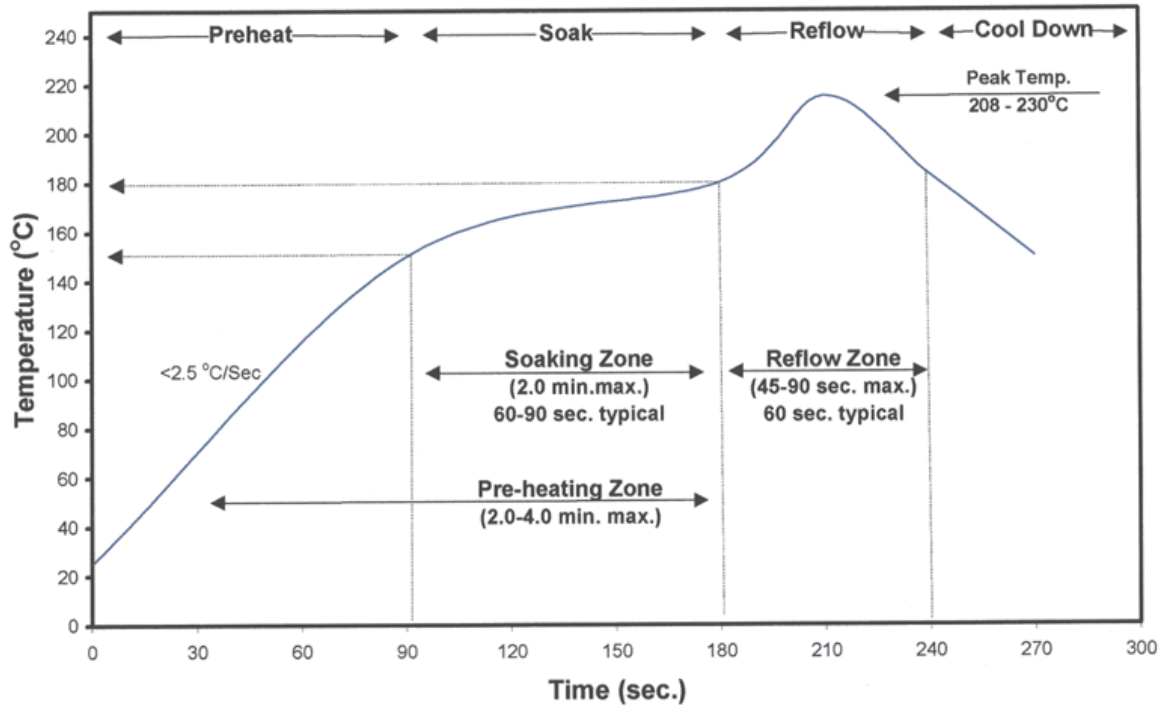
### Kester Lead Free Reflow Profile Alloys: Sn96.5/Ag3.0/Cu0.5 and Sn96.5/Ag3.5



## 8.0 PROCESSING, Sn63/Pb37

Series: **QSS / QTS** High Speed Socket 0.635 mm pitch

**Standard Solder Paste Reflow Profile  
for Kester Paste Containing  
Alloys: Sn63Pb37 or Sn62Pb36Ag02**



**9.0 Multi Connector Processing Placement Limitations – See Following Figures**

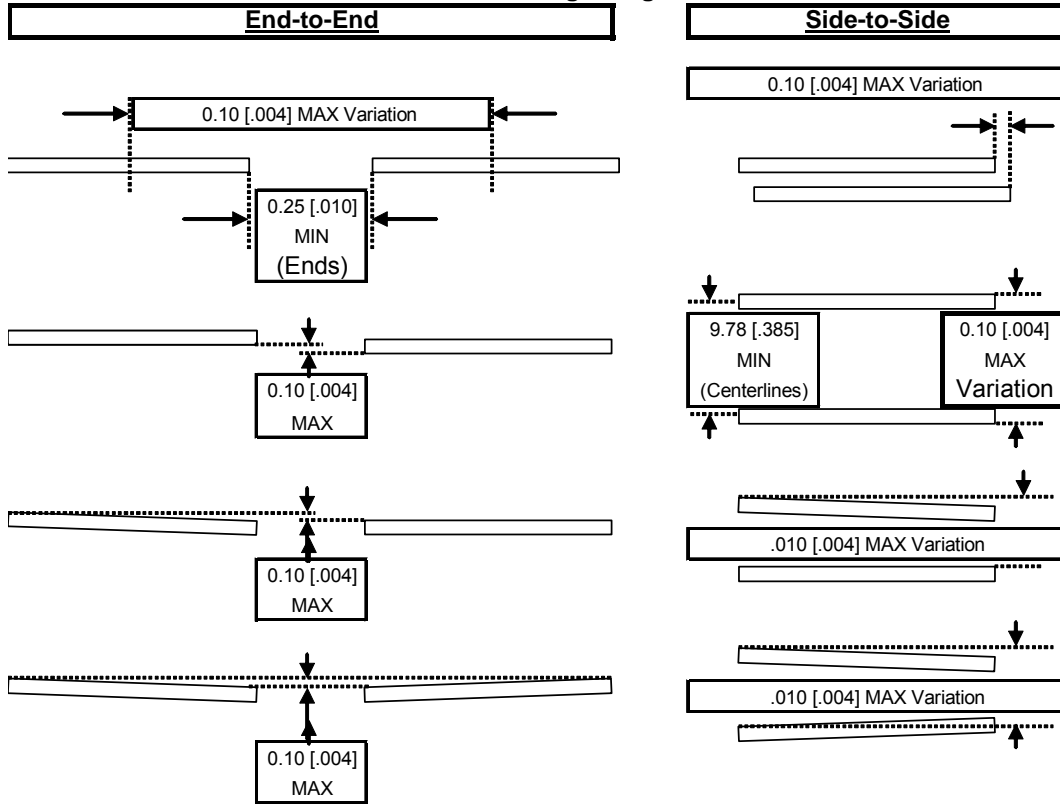
9.1 When using multiple connectors on a printed circuit board, care must be taken to ensure proper alignment and the following figures illustrate the placement limitations for these connectors, but do not take into account the spacing required for additional components, or automatic placement / rework equipment.

9.2 For applications requiring more than two connectors per board, please contact Samtec's Interconnect Processing group at [ipg@samtec.com](mailto:ipg@samtec.com)

Series: QSS / QTS High Speed Socket 0.635 mm pitch

9.3 Multi Connector processing – Constrained Board Alignment

**Constrained Board Alignment-multi connectors processed to boards**  
 CTE differences between PCB / fixturing during re-flow  
 must be considered regarding connector locations



**Constrained Board Alignment-multi connectors processed to boards**

